

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HARRY T. HONG and KEITH W. KATAHARA

Appeal No. 1997-0594
Application 08/448,134

ON BRIEF

Before JERRY SMITH, FLEMING, and RUGGIERO, Administrative
Patent Judges.

FLEMING, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of
claims 1, 11 through 14 and 17. Claims 2-10, 15 and 16 have

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been canceled.

The invention relates to a method of measuring earth formation properties using a sensor disposed in a drill bit. Appellants identify on page 4 of the specification that the method makes use of a drill stem which has two instrument carrying sections with a drill bit on the distal end. On page 5 of the specification, Appellants state that the drill bit body contains a sensor which transmits microwave electromagnetic wave energy into the formation directly in front of the bit. Further, on page 7 of the specification, Appellants identify that the sensor receives the microwave energy reflected off of the formation ahead of the drill bit. This reflected signal can be indicative of the water content of the formation and is either analyzed or stored for later analysis.

Independent claim 11 is illustrative of the invention.

A method for determining the presence of hydrocarbons in a relatively thin layer of an earth formation comprising the steps of:

drilling into said earth formation using a rotatable

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drill stem having a bit positioned on its lower end and in contact with said earth formation, said bit including a bit body having a transverse face adjacent a zone of said earth formation which is substantially uninvaded by drilling fluid and including a sensor mounted thereon and adjacent to said transverse face of said bit to emit electromagnetic wave energy into said substantially uninvaded zone of said earth formation ahead of said bit during the drilling thereof;

generating electromagnetic wave energy for emission from said sensor into said uninvaded zone during said drilling;

receiving reflected electromagnetic wave energy from said uninvaded zone at said sensor during said drilling;

measuring the alteration of at least one characteristic of said electromagnetic wave energy emitted by said sensor and received at said sensor and caused by said uninvaded zone; and

comparing said measurement of said electromagnetic wave energy with said measurement of one of density and porosity measurements to detect the presence of hydrocarbons in said uninvaded zone.

The Examiner relies upon the following references:

Blondeau	2,310,611	Feb. 9, 1943
Piety	3,293,542	Dec. 20, 1966
Unterberger et al. (Unterberger)	3,412,321	Nov. 19, 1968
Rau	4,893,084	Jan. 9, 1990
Bartel et al. (Bartel)	4,940,943	Jul. 10, 1990

The following rejections are appealed.¹

¹ It is noted that the briefs and answer address an obviousness type double patenting rejection. However,

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Claims 1, 11, 13 and 17 are rejected under 35 U.S.C. § 103 as being unpatentable over Unterberger et al. and Bartel et al.

Claims 12 and 14 are rejected under 35 U.S.C. § 103 as being unpatentable over Unterberger et al., Bartel et al. and Rau.

Claims 1, 11, 13 and 17 are rejected under 35 U.S.C. § 103 as being unpatentable over Unterberger et al., Bartel et al., Blondeau and Piety.

Claims 12 and 14 are rejected under 35 U.S.C. § 103 as being unpatentable over Unterberger et al., Bartel et al., Blondeau, Piety and Rau.

Rather than reiterate the arguments of the Appellants and the Examiner, reference is made to the Briefs² and Answer for

Appellants submitted a terminal disclaimer on October 15, 1996 which was accepted by the Examiner in the communication dated April 9, 1999. Accordingly, the rejection based upon obviousness type double patenting is not before us.

² Appellants filed an appeal brief on July 18, 1996. Appellants filed a reply brief on October 11, 1996. On November 5, 1996 the Examiner mailed a communication stating that the reply brief has been entered and considered. On

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the respective details thereof.

Opinion

We will not sustain any of the rejections of claims 1, 11 through 14 and 17 under 35 U.S.C. § 103.

The Examiner has not set forth a *prima facie case*. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found in the prior art or by the implication contained in such teachings or suggestions.

In re Sernaker, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). "Additionally, when determining obviousness, the claimed invention should be considered as a whole; there is no legally recognizable "heart" of the invention." ***Para-Ordinance Mfg.***,

September 8, 1998 the Board of Appeals and Interferences remanded the case to: have a terminal disclaimer considered, amend the brief to identify the real party of interest and have an appendix which properly refers to the claims. On September 22, 1998 Appellants filed a revised appeal brief. On April 9, 1999 the Examiner identified that the September 22, 1998 brief was defective as only 1 copy was submitted. On May 3, 1999 Appellants refiled the September 22, 1998 brief in triplicate.

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Inc. v. SGS Importers Int'l, Inc., 73 F.3d 1085, 1087, 37
USPQ2d 1237, 1239 (Fed. Cir. 1995) (**citing W. L. Gore &
Assocs., Inc. v. Garlock Inc.**, 721 F.2d 1540, 1548, 220 USPQ
303, 309 (Fed. Cir. 1983), **cert. denied**, 469 U.S. 851 (1984)).

On page 5 of the answer, the Examiner identifies all of the claimed elements that Unterberger teaches. Further, the Examiner states "Unterberger et al. fail to disclose mounting the sensor on the transverse face of a drill bit." In this same passage the Examiner cites Bartel et al. as evidence that it is "well-known to provide logging devices having both wire line and MWD (*Monitoring While Drilling*) embodiments" (meaning of abbreviation added). From this the Examiner concluded that it would have been obvious to mount Unterberger's sensor on the face of a drill bit. On pages 8 and 9 of the answer, in an alternative rejection the Examiner adds Piety and Blondeau as evidence that "it is well-known to propagate signals from the head of a drill string."

Appellants argue on page 7 of the September 22, 1998 appeal brief (brief), that Unterberger does not suggest that sensors should be used on freshly exposed surfaces during

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drilling. Further, on page 8 of the brief, Appellants assert that Bartel teaches that the sensors should be mounted above the drill bit and does not suggest that the sensors be placed on the transverse face of a drill bit. Finally, Appellants assert on page 10 of the brief, that neither Blondeau nor Piety teach or suggest a sensor on the bit face which causes emission and reception of signals with respect to a zone uninvaded by drilling fluids.

Before turning to the references applied, we must analyze the claims. In analyzing the scope of the claims, office personnel must rely on the Appellant's disclosure to properly determine the meaning of terms used in the claims. **Markman v. Westview Instruments, Inc.**, 52 F.3d 967, 980, 34 USPQ2d 1321, 1330 (Fed. Cir.) (en banc), **aff'd**, 116 S. Ct. 1384 (1996). We find that the scope of claims 1 and 11 includes a sensor mounted on the face of the drill bit which emits electromagnetic signals into the earth formation ahead of the drill bit and receives the signals which are reflected off of the formation. Claim 1 contains the limitation "a sensor mounted in said bit body and adjacent said transverse face in

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a position to be in close proximity to a zone of said formation ahead of said bit and which is substantially uninvasioned by drilling fluid during drilling" where "an instrument is operably connected to said sensor for causing the emission and receipt of signals with respect to said zone." Similarly, method claim 11 contains the limitations "generating electromagnetic wave energy for emission from said sensor into said uninvasioned zone during said drilling" and receiving reflected electromagnetic wave energy from said uninvasioned zone at said sensor during said drilling" where the drilling limitation identifies that the sensor is mounted on the face of the drill bit and the uninvasioned zone is an earth formation ahead of the drill bit.

Turning to the rejection, we find that the combination of Unterberger et al., Bartel et al., Blondeau and Piety do not teach or suggest the mounting of a sensor on the drill bit which emits signals into and receives signals from the formation ahead of the drill bit. The Examiner's conclusion on page 5 of the answer that "it would have been obvious to one of ordinary skill in relevant art to modify the sensor of

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Unterberger et al. for use in a MWD apparatus and thereby locate the sensor on the transverse face of the drill bit . . . " is unsupported by evidence. We are not inclined to dispense with proof by evidence when the proposition at issue is not supported by a teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration. Our reviewing court requires this evidence in order to establish a *prima facie* case. *In re Piasecki*, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984); *In re Knapp-Monarch Co.*, 296 F.2d 230, 232, 132 USPQ 6, 8 (CCPA 1961); *In re Cofer*, 354 F.2d 664, 668, 148 USPQ 268, 271-72 (CCPA 1966). Furthermore, our reviewing court states in *In re Piasecki*, 745 F.2d 1468, 223 USPQ 785, 788 (Fed. Cir. 1984) the following:

The Supreme Court in *Graham v. John Deere Co.*, 383 U.S. 1 (1966), focused on the procedural and evidentiary processes in reaching a conclusion under Section 103. As adapted to ex parte procedure, Graham is interpreted as continuing to place the "burden of proof on the Patent Office which requires it to produce the factual basis for its rejection of an application under sections 102 and 103". *Citing In re Warner*, 379 F.2d 1011, 1016, 154 USPQ 173, 177 (CCPA 1967).

We find that Bartel teaches electromagnetic logging while

drilling. However, Bartel teaches that the sensors are mounted on the drill mandrel, see column 2, lines 33 to 37, and not in the drill bit as is claimed. Further, we find that both Blondeau and Piety teach that electromagnetic energy is emitted from the drill bit, i.e. Blondeau, column 3 lines 54 to 59 and Piety figure 1, column 2, lines 26 to 31. Both Blondeau and Piety teach that the drill bit itself is the electrode. However, we find that neither of these references teach a separate sensor on the drill bit to emit the energy. Further, we find that neither Blondeau nor Piety teach receiving the reflected signal at a sensor on the drill bit, for example, Blondeau teaches that the returned signal is received by electrodes 15 and 16 on the surface and Piety teaches that the return signal is received by electrodes 23, 24, and 25 in the drill string.

For the foregoing reasons we will not sustain the rejection of claims 1, 11, 13 and 17 under 35 U.S.C. § 103. Claims 12 and 14 are dependent upon claim 11, accordingly, the rejection of these claims will not be sustained. Therefore the decision of

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the Examiner rejecting claims 1, 11 through 14 and 17 under
35 U.S.C. § 103 is reversed.

REVERSED

JERRY SMITH)	
Administrative Patent Judge)	
)	
)	
)	BOARD OF PATENT
MICHAEL R. FLEMING))
Administrative Patent Judge)	APPEALS AND
)	
)	INTERFERENCES
)	
JOSEPH F. RUGGIERO)	
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